NORTH DAKOTA DEPARTMENT OF HEALTH
PROPOSED AMENDMENTS
CHAPTER 33-16-02.1
STANDARDS OF QUALITY FOR WATERS OF THE STATE

Section 33-16-02.1-04 is amended as follows:

33-16-02.1-04. Definitions.

The terms used in this chapter have the same meaning as in North Dakota Century Code chapter 61-28, except:

1. "Acute standard" means the one-hour average concentration does not exceed the listed concentration more than once every three years.

2. "Best management practices" are methods, measures, or procedures selected by the department to control nonpoint source pollution. Best management practices include, but are not limited to, structural and nonstructural measures and operation and maintenance procedures.

3. "Chronic standard" means the four-day average concentration does not exceed the listed concentration more than once every three years.

4. "Consecutive thirty-day average" is the average of samples taken during any consecutive thirty-day period. It is not a requirement for thirty consecutive daily samples.

5. "Department" means the North Dakota state department of health.

6. A standard defined as "dissolved" means the total quantity of a given material present in a filtered water sample, regardless of the form or nature of its occurrence.

7. "Pollution" means such contamination, or other alteration of the physical, chemical, or biological properties, of any waters of the state, including change in temperature, taste, color, turbidity, or odor. Pollution includes discharge of any liquid, gaseous, solid, radioactive, or other substance into any waters of the state that will or is likely to create a nuisance or render such waters harmful, detrimental, or injurious to public health, safety, or welfare; domestic, commercial, industrial, agricultural, recreational, or other legitimate beneficial uses; or livestock, wild animals, birds, fish, or other aquatic biota.

8. "Site-specific standards" mean water quality criteria developed to reflect local environmental conditions to protect the uses of a specific water body.

9. A standard defined as "total" means the entire quantity of a given material present in an unfiltered water sample regardless of the form or nature of its occurrence. This includes both

dissolved and suspended forms of a substance, including the entire amount of the substance present as a constituent of the particulate material. Total recoverable is the quantity of a given material in an unfiltered aqueous sample following digestion by refluxing with hot dilute mineral acid.

10. "Water usage". The best usage for the waters shall be those uses determined to be the most consistent with present and potential uses in accordance with the economic and social development of the area. Present principal best uses are those defined in subdivisions a, b, c, d, and e. These are not to be construed to be the only possible usages.

    a. Municipal and domestic water. Waters suitable for use as a source of water supply for drinking and culinary purposes after treatment to a level approved by the department.

    b. Fish and aquatic biota. Waters suitable for the propagation and support of fish and other aquatic biota and waters that will not adversely affect wildlife in the area. Low flows or natural physical and chemical conditions in some waters may limit their value for fish propagation or aquatic biota.

    c. Recreation. Primary recreational waters are suitable for recreation where direct body contact is involved, such as bathing and swimming, and where secondary recreational activities such as boating, fishing, and wading are involved. Natural high turbidities in some waters and physical characteristics of banks and streambeds of many streams are factors that limit their value for bathing.

    d. Agricultural uses. Waters suitable for irrigation, stock watering, and other agricultural uses, but not suitable for use as a source of domestic supply for the farm unless satisfactory treatment is provided.

    e. Industrial water. Waters suitable for industrial purposes, including food processing, after treatment. Treatment may include that necessary for prevention of boiler scale and corrosion.

11. "Nutrients" mean the chemical elements, primarily nitrogen and phosphorus, which are critical to the growth of aquatic plants and animals.

12. “Eutrophication” means the process of enrichment of rivers, stream, lakes, reservoirs and wetlands with nutrients needed to maintain primary production.

History: Effective June 1, 2001; amended effective October 1, 2006; April 1, 2014; amended effective _____, 2018.
General Authority: NDCC 61-28-04, 61-28-05
Law Implemented: NDCC 23-33, 61-28

Section 33-16-02.1-05 is amended as follows:

33-16-02.1-05. Variances and Compliance Schedules.

Upon written application by the responsible discharger, the department finds that by reason of substantial and widespread economic and social impacts the strict enforcement of state water quality criteria is not feasible, the department can permit a variance to the water quality standard for the affected segment. The department can set conditions and time limitations with the intent that progress toward improvements in water quality will be made. This can include interim criteria which must be reviewed at least once every three years. A variance will be granted only after fulfillment of the approved requirements at 40 CFR § 131.14, including public participation requirements and environmental protection agency approval. A variance will not preclude an existing use.

A North Dakota pollution discharge elimination system (NDPDES) permit may contain a schedule to return a permittee to compliance with water quality based effluent limits consistent with federal and state regulation(s). Compliance schedules in NDPDES permits are subject to the requirements of N.D. Administrative Code 33-16-01-15 and cannot be issued for new discharges or sources.

History: Effective June 1, 2001; amended effective , 2018.
General Authority: NDCC 61-28-04, 61-28-05
Law Implemented: NDCC 23-33, 61-28

Section 33-16-02.1-08 is amended as follows:

33-16-02.1-08. General water quality standards.

1. **Narrative standards.**

   a. The following minimum conditions are applicable to all waters of the state except for class II ground waters. All waters of the state shall be:

      (1) Free from substances attributable to municipal, industrial, or other discharges or agricultural practices that will cause the formation of putrescent or otherwise objectionable sludge deposits.

      (2) Free from floating debris, oil, scum, and other floating materials attributable to municipal, industrial, or other discharges or agricultural practices in sufficient amounts to be unsightly or deleterious.

      (3) Free from materials attributable to municipal, industrial, or other discharges or agricultural practices producing color, odor, or other conditions to such a degree as to create a nuisance or render any undesirable taste to fish flesh or, in any way, make fish inedible.

      (4) Free from substances attributable to municipal, industrial, or other discharges or agricultural practices in concentrations or combinations which are toxic or harmful to humans, animals, plants, or resident aquatic biota. For surface water, this standard will be enforced in part through appropriate whole effluent toxicity requirements in North Dakota pollutant discharge elimination system permits.

      (5) Free from oil or grease residue attributable to wastewater, which causes a visible film or sheen upon the waters or any discoloration of the surface of adjoining shoreline or causes a sludge or emulsion to be deposited beneath the surface of the water or upon the adjoining shorelines or prevents classified uses of such waters.

      (6) Free from nutrients attributed to municipal, industrial, or other discharges or agricultural practices, in concentrations or loadings which will cause accelerated eutrophication resulting in the objectionable growth of aquatic vegetation or algae or other impairments to the extent that it threatens public health or welfare or impairs present or future beneficial uses.

   b. There shall be no materials such as garbage, rubbish, offal, trash, cans, bottles, drums, or any unwanted or discarded material disposed of into the waters of the state.

   c. There shall be no disposal of livestock or domestic animals in waters of the state.

   d. The department shall propose and submit to the state engineer the minimum streamflows of major rivers in the state necessary to protect the public health and welfare. The department's determination shall address the present and prospective future use of the

rivers for public water supplies, propagation of fish and aquatic life and wildlife, recreational purposes, and agricultural, industrial, and other legitimate uses.

e. No discharge of pollutants, which alone or in combination with other substances, shall:

(1) Cause a public health hazard or injury to environmental resources;

(2) Impair existing or reasonable beneficial uses of the receiving waters; or

(3) Directly or indirectly cause concentrations of pollutants to exceed applicable standards of the receiving waters.

f. If the department determines that site-specific criteria are necessary and appropriate for the protection of designated uses, procedures described in the environmental protection agency's Water Quality Standards Handbook 1994 or other defensible methods may be utilized to determine maximum limits. Where natural chemical, physical, and biological characteristics result in exceedances of the limits set forth in this section, the department may derive site-specific criteria based on the natural background level or condition. All available information shall be examined, and all possible sources of a contaminant will be identified in determining the naturally occurring concentration. All site-specific criteria shall be noticed for public comment and subjected to other applicable public participation requirements prior to being adopted.

2. **Narrative biological goal.**

a. Goal. The biological condition of surface waters shall be similar to that of sites or water bodies determined by the department to be regional reference sites.

b. Definitions.

(1) "Assemblage" means an association of aquatic organisms of similar taxonomic classification living in the same area. Examples of assemblages include fish, macroinvertebrates, algae, and vascular plants.

(2) "Aquatic organism" means any plant or animal which lives at least part of its life cycle in water.

(3) "Biological condition" means the taxonomic composition, richness, and functional organization of an assemblage of aquatic organisms at a site or within a water body.

(4) "Functional organization" means the number of species or abundance of organisms within an assemblage which perform the same or similar ecological functions.

(5) "Metric" means an expression of biological community composition, richness, or function which displays a predictable, measurable change in value along a gradient of pollution or other anthropogenic disturbance.

(6) "Regional reference sites" are sites or water bodies which are determined by the department to be representative of sites or water bodies of similar type (e.g., hydrology and ecoregion) and are least impaired with respect to habitat, water quality, watershed land use, and riparian and biological condition.

(7) "Richness" means the absolute number of taxa in an assemblage at a site or within a water body.

(8) "Taxonomic composition" means the identity and abundance of species or taxonomic groupings within an assemblage at a site or within a water body.

c. Implementation. The intent of the state in adopting a narrative biological goal is solely to provide an additional assessment method that can be used to identify impaired surface waters. Regulatory or enforcement actions based solely on a narrative biological goal, such as the development and enforcement of North Dakota pollutant discharge elimination system permit limits, are not authorized. However, adequate and representative biological assessment information may be used in combination with other information to assist in determining whether designated uses are attained and to assist in determining whether new or revised chemical-specific permit limitations may be needed. Implementation will be based on the comparison of current biological conditions at a particular site to the biological conditions deemed attainable based on regional reference sites. In implementing a narrative biological goal, biological condition may be expressed through an index composed of multiple metrics or through appropriate statistical procedures.

History: Effective June 1, 2001; amended effective _____, 2018.
General Authority: NDCC 61-28-04
Law Implemented: NDCC 23-33, 61-28

Section 33-16-02.1-09 is amended as follows:

33-16-02.1-09. Surface water classifications, mixing zones, and numeric standards.

1. **Surface water classifications.** Procedures for the classifications of streams and lakes of the state shall follow this subsection. Classifications of streams and lakes are listed in appendix I and appendix II, respectively.

   a. Class I streams. The quality of the waters in this class shall be suitable for the propagation or protection, or both, of resident fish species and other aquatic biota and for swimming, boating, and other water recreation. The quality of the waters shall be suitable for irrigation, stock watering, and wildlife without injurious effects. After treatment consisting of coagulation, settling, filtration, and chlorination, or equivalent treatment processes, the water quality shall meet the bacteriological, physical, and chemical requirements of the department for municipal or domestic use.

   b. Class IA streams. The quality of the waters in this class shall be the same as the quality of class I streams, except that where natural conditions exceed class I criteria for municipal and domestic use, the availability of softening or other treatment methods may be considered in determining whether ambient water quality meets the drinking water requirements of the department.

      The Sheyenne River from its headwaters to one-tenth mile downstream from Baldhill Dam is not classified for municipal or domestic use.

   c. Class II streams. The quality of the waters in this class shall be the same as the quality of class I streams, except that additional treatment may be required to meet the drinking water requirements of the department. Streams in this classification may be intermittent in nature which would make these waters of limited value for beneficial uses such as municipal water, fish life, irrigation, bathing, or swimming.

   d. Class III streams. The quality of the waters in this class shall be suitable for agricultural and industrial uses. Streams in this class generally have low average flows with prolonged periods of no flow. During periods of no flow, they are of limited value for recreation and fish and aquatic biota. The quality of these waters must be maintained to protect secondary contact recreation uses (e.g., wading), fish and aquatic biota, and wildlife uses.

   e. Wetlands. These water bodies, including isolated ponds, sloughs, and marshes, are to be considered waters of the state and will be protected under section 33-16-02.1-08.

f. Lakes and reservoirs. The type of fishery a lake or reservoir may be capable of supporting is based on the lake's or reservoir's geophysical characteristics. The capability of a lake or reservoir to support a fishery may be affected by seasonal or climatic variability or other natural occurrences, which may alter the physical and chemical characteristics of the lake or reservoir.

Class	Characteristics
1	Cold water fishery. Waters capable of supporting growth of cold water fish species (e.g., salmonids) and associated aquatic biota.
2	Cool water fishery. Waters capable of supporting natural reproduction and growth of cool water fishes (e.g., northern pike and walleye) and associated aquatic biota. These waters are also capable of supporting the growth and marginal survival of cold water species and associated biota.
3	Warm water fishery. Waters capable of supporting natural reproduction and growth of warm water fishes (e.g., largemouth bass and bluegill) and associated aquatic biota. Some cool water species may also be present.
4	Marginal fishery. Waters capable of supporting a fishery on a short-term or seasonal basis (generally a "put and take" fishery).
5	Not capable of supporting a fishery due to high salinity.

2. **Mixing zones.** North Dakota mixing zone and dilution policy is contained in appendix III.

3. **Numeric standards.**

a. Class I streams. ~~Unless stated otherwise, maximum limits~~ The physical and chemical criteria for class I streams are listed in table 1 and table 2.

b. Class IA streams. The physical and chemical criteria shall be those for class I streams, with the ~~following~~ exceptions for chloride, percent sodium and sulfate as listed in Table 1~~:~~.

c. Site-Specific Sulfate Standard. The physical and chemical criteria for the Sheyenne River from its headwaters to one-tenth of a mile downstream from Baldhill Dam shall be those for class IA streams, with the exception of sulfate as listed in Table 1.

~~| Substance or Characteristic | Maximum Limit |~~
~~|---|---|~~
~~| Chlorides (total) | 175 mg/l (30-day arithmetic average) |~~
~~| Sodium | 60% of total cations as mEq/l |~~
~~| Sulfate (total) | 450 mg/l (30-day arithmetic average) |~~

~~Site-Specific Sulfate (total) Standard~~

~~The following site-specific standard applies to the Sheyenne River from its headwaters to one-tenth mile downstream from Baldhill Dam.~~

~~Sulfate (total) 750 mg/l~~

~~131.10(b) requirement~~

~~The water quality standards for the Red River and the portions of the Sheyenne River located downstream from the segment of the Sheyenne River to which the site-specific sulfate standard applies must continue to be maintained. The Sheyenne River from 0.1 mile downstream from Baldhill Dam to the confluence with the Red River shall not exceed 450 mg/l sulfate (total)~~

~~30-day arithmetic average and the Red River shall not exceed 250 mg/l sulfate (total 30-day arithmetic average after mixing, downstream from the confluence of the Sheyenne River. Regulated pollution control efforts must be developed to achieve compliance with these water quality standards.~~

~~c~~d. Class II streams. The physical and chemical criteria shall be those for class IA, with the ~~following~~ exceptions for chloride and pH as listed in Table 1~~:~~.

~~Substance or Characteristic~~	~~Maximum Limit~~
~~Chlorides (total)~~	~~250 mg/l (30-day arithmetic average)~~
~~pH~~	~~6.0-9.0 (up to 10% of representative samples collected during any 3-year period may exceed this range provided that lethal conditions are avoided)~~

~~d~~e. Class III streams. The physical and chemical criteria shall be those for class II, with the ~~following~~ exceptions for sulfate as listed in Table 1~~:~~.

~~Substance or Characteristic~~	~~Maximum Limit~~
~~Sulfate (total)~~	~~750 mg/l (30-day arithmetic average)~~

f. Wetlands, including isolated ponds, class 4 lakes not listed in appendix II, sloughs and marshes. The physical and chemical criteria shall be those for class III streams, with exceptions for temperature, dissolved oxygen as listed in g. 6, and other conditions not attributable to municipal, industrial, domestic or agricultural sources.

~~e~~g. Lakes and reservoirs.

(1) ~~The beneficial uses and parameter limitations designated for class I streams shall apply to all classified lakes or reservoirs. However, specific background studies and information may require that the department revise a standard for any specific parameter.~~ The physical and chemical criteria or class I streams shall apply to all classified lakes or reservoirs listed in appendix II.

(2) In addition, a guideline for use as a goal in any lake or reservoir improvement or maintenance program is a growing season (April through November) average chlorophyll-a concentration of 20.0 µg/l.

(3) The temperature standard for class I streams does not apply to Nelson Lake in Oliver County. The temperature of any discharge to Nelson Lake shall not have an adverse effect on fish, aquatic biota, recreation, and wildlife.

(4) A numeric temperature standard of not greater than fifty-nine degrees Fahrenheit [15 degrees Celsius] shall be maintained in the hypolimnion of class I lakes and reservoirs during periods of thermal stratification.

(5) The numeric dissolved oxygen standard of five mg/l as a daily minimum does not apply to the hypolimnion of class III and IV lakes and reservoirs during periods of thermal stratification.

(6) The numeric dissolved oxygen standard of five milligrams per liter (mg/l) as a daily minimum and the maximum temperature of eighty-five degrees Fahrenheit [29.44

degrees Celsius] shall not apply to wetlands and class 4 lakes.

(~~6~~7) Lake Sakakawea must maintain a minimum volume of water of five hundred thousand-acre feet [61674-hectare meters] that has a temperature of fifty-nine degrees Fahrenheit [15 degrees Celsius] or less and a dissolved oxygen concentration of not less than five mg/l.

History: Effective June 1, 2001; amended effective October 1, 2006; July 1, 2010; April 1, 2014; amended effective _____, 2018.
General Authority: NDCC 61-28-04
Law Implemented: NDCC 23-33, 61-28

TABLE 1

MAXIMUM LIMITS FOR SUBSTANCES IN
OR CHARACTERISTICS OF CLASS I STREAMS

CAS[1] No.	Substance or Characteristic	Maximum Limit
		Acute Standard
7429905	Aluminum	750 ug/l
		Chronic Standard
		87 ug/l Where the pH is equal to or greater than 7.0, and the hardness is equal to or greater than 50 mg/l as $CaCO_3$ in the receiving water after mixing, the 87 ug/l chronic total recoverable aluminum criterion will not apply, and aluminum will be regulated based on compliance with the 750 ug/l acute total recoverable aluminum criterion.
		Acute Standard
7446-41-7	Ammonia (Total as N)	The one-hour average concentration of total ammonia (expressed as N in mg/l) does not exceed, more often than once every three years on the average, the numerical value given by the following formula: $\frac{0.411}{1 + 10^{7.204-pH}} + \frac{58.4}{1+10^{pH-7.204}}$, where salmonids are absent; or $\frac{0.275}{1 + 10^{7.204-pH}} + \frac{39.0}{1 + 10^{pH-7.204}}$, where salmonids are present.
		Chronic Standard
		The 30-day average concentration of total ammonia (expressed as N in mg/l) does not exceed, more often than once every three years on the average, the numerical value given by the following formula; and the highest 4-day average concentration of total ammonia within the 30-day averaging period does not exceed 2.5 times the numerical value given by the following formula: $= \left(\frac{0.0577}{1 + 10^{7.688-pH}} + \frac{2.487}{1 + 10^{pH-7.688}} \right)$ • Criteria Variable (CV); where CV = 2.85, when T ≤ 14° C; or $CV = 1.45 \times 10^{0.028 \cdot (25-T)}$, when T > 14° C.
		Site-Specific Chronic Standard
		The following site-specific standard applies to the Red River of the North beginning at the 12th Avenue North bridge in Fargo, North Dakota, and extending approximately 32 miles downstream to its confluence with the Buffalo River, Minnesota. This site-specific standard applies only during the months of October, November, December, January, and February. During the months of March

CAS[1] No.	Substance or Characteristic	Maximum Limit
		through September, the statewide chronic ammonia standard applies. The 30-day average concentration of total ammonia (expressed as N in mg/l) does not exceed, more often than once every three years on the average, the numerical value given by the following formula; and the highest 4-day average concentration of total ammonia within the 30-day averaging period does not exceed 2.5 times the numerical value given by the following formula: $= \left(\frac{0.0577}{1 + 10^{7.688-pH}} + \frac{2.487}{1 + 10^{pH-7.688}} \right) \bullet CV;$ where CV = 4.63, when T ≤ 7° C; or $CV = 1.45 \times 10^{0.028 \cdot (25-T)}$, when T > 7º C.
7440-39-3	Barium (Total)	1.0 mg/l (one-day arithmetic average)
	Boron (Total)	.75 mg/l (30-day arithmetic average)
16887-00-6	Chlorides (Total)	100 mg/l (30-day arithmetic average)
7782-50-5	Chlorine Residual (Total)	Acute .019 mg/l Chronic .011 mg/l
7782-44-7	Dissolved Oxygen	5 mg/l as a daily minimum (up to 10% of representative samples collected during any 3-year period may be less than this value provided that lethal conditions are avoided)
	E. coli[3]	Not to exceed 126 organisms per 100 ml as a geometric mean of representative samples collected during any 30-day consecutive period, nor shall more than 10 percent of samples collected during any 30-day consecutive period individually exceed 409 organisms per 100 ml. For assessment purposes, the 30-day consecutive period shall follow the calendar month. This standard shall apply only during the recreation season May 1 to September 30.
14797-55-8	Nitrates (N) (Diss.)[2]	1.0 mg/l (up to 10% of samples may exceed)
	pH	7.0-9.0 (up to 10% of representative samples collected during any three-year period may exceed this range, provided that lethal conditions are avoided)
108-95-2	Phenols (Total)	0.3 mg/l (organoleptic criterion) (one-day arithmetic average)
	Sodium	50 percent of total cations as mEq/l
	Sulfates (Total as SO_4)	250 mg/l (30-day arithmetic average)
	Temperature	Eighty-five degrees Fahrenheit [29.44 degrees Celsius]. The maximum increase shall not be greater than five degrees Fahrenheit [2.78 degrees Celsius] above natural background conditions.

~~CAS[1] No.~~	~~Substance or Characteristic~~	~~Maximum Limit~~
	~~Combined radium 226 and radium 228 (Total)~~	~~5 pCi/l (30-day arithmetic average)~~
	~~Gross alpha particle activity, including radium 226, but excluding radon and uranium~~	~~15 pCi/l (30-day arithmetic average)~~

~~[1] CAS No. is the chemical abstract service registry number. The registry database contains records for specific substances identified by the chemical abstract service.~~

~~[2] The standard for nitrates (N) is intended as an interim guideline limit. Since each stream or lake has unique characteristics which determine the concentration of this constituent that will cause excessive plant growth (eutrophication), the department reserves the right to review this standard after additional study and to set specific limitations on any waters of the state. However, in no case shall the concentration for nitrate plus nitrite N exceed 10 mg/l for any waters used as a municipal or domestic drinking water supply.~~

~~[3] Where the E. coli criteria are exceeded and there are natural sources, the criteria may be considered attained, provided there is reasonable basis for concluding that the indicator bacteria density attributable to anthropogenic sources is consistent with the level of water quality required by the criteria. This may be the situation, for example, in headwater streams that are minimally affected by anthropogenic activities.~~

TABLE 1
MAXIMUM LIMITS FOR SUBSTANCES IN OR CHARACTERISTICS OF CLASS I, IA, II & III STREAMS

CAS[1] No.	Substance or Characteristic (a = aquatic Life) (b = municipal & domestic drinking water) (c = agricultural, irrigation, industrial) (d= recreation)	Maximum Limit
7429905	Aluminum (a)	**Acute:** 750 micrograms per liter (µg/l)
		Chronic: 87 µg/l Where the pH is equal to or greater than 7.0, and the hardness is equal to or greater than 50 mg/l as $CaCO_3$ in the receiving water after mixing, the 87 ug/l chronic total recoverable aluminum criterion will not apply, and aluminum will be regulated based on compliance with the 750 µg/l acute total recoverable aluminum criterion.

7446-41-7	Ammonia (Total as N) (a)	**Acute:** The 1-hour average concentration of total ammonia (expressed as N in mg/l) does not exceed, more often than once every three years on the average, the numerical value given by the following formula: $$\frac{0.411}{1+10^{7.204-pH}}+\frac{58.4}{1+10^{pH-7.204}}$$ where salmonids are absent; or $$\frac{0.275}{1+10^{7.204-pH}}+\frac{39.0}{1+10^{pH-7.204}}$$ where salmonids are present.
		Chronic: The 30-day average concentration of total ammonia (expressed as N in mg/l) does not exceed, more often than once every three years on the average, the numerical value given by the following formula; and the highest 4-day average concentration of total ammonia within the 30-day averaging period does not exceed 2.5 times the numerical value given by the following formula: $$(CV)\left(\frac{0.0577}{1+10^{7.688-pH}}\right)+\left(\frac{2.487}{1+10^{pH-7.688}}\right)$$ Where (*CV*) = 2.85 when Temperature (T) is ≤ 14°C; or where: (*CV*) = 1.45 $10^{0.028(25-T)}$, when T > 14°C.
		Site-Specific Chronic: The following site-specific chronic standard applies to the Red River of the North beginning at the 12th Avenue North bridge in Fargo, North Dakota, and extending approximately 32 miles downstream to its confluence with the Buffalo River, Minnesota. This site-specific standard applies only during the months of October, November, December, January and February. During the months of March through September, the statewide chronic ammonia standard applies. The 30-day average concentration of total ammonia (expressed as N in mg/l) does not exceed, more often than once every three years on the average, the numerical value given by the following formula; and the highest 4-day average concentration of total ammonia within the 30-day averaging period

		does not exceed 2.5 times the numerical value given by the following formula: $$(CV)\left(\frac{0.0577}{1+10^{7.688-pH}}\right)+\left(\frac{2.487}{1+10^{pH-7.688}}\right)$$ Where (*CV*) = 4.63 when Temperature (T) is ≤ 7°C; or where (CV)= 1.45 $10^{0.028(25-T)}$, when T>7°C
7440-39-3	Barium (Total) (b)	1.0 mg/l (1-day arithmetic average)
7440-42-8	Boron (Total) (c)	0.75 mg/l (30-day arithmetic average)
16887-00-6	Chloride (Total) (a, b, c)	**Class I:** 100 mg/l (30-day arithmetic average)
		Class IA: 175 mg/l (30-day arithmetic average)
		Class II and Class III: 250 mg/l (30-day arithmeticaverage)
7782-50-5	Chlorine Residual (Total) (a)	**Acute:** 0.019 mg/l
		Chronic: 0.011 mg/l
7782-44-7	Dissolved oxygen (a)	5 mg/l as a daily minimum (up to 10% of representative samples collected during any 3-year period may be less than this value provided lethal conditions are avoided).
14797-55-8	Nitrate as N^2 (a, b)	1.0 mg/l (up to 10% of samples may exceed)
14797-65-0	Nitrite as N (b)	1.0 mg/l
	E. Coli[3] (d)	Not to exceed 126 organisms per 100 milliliters (ml) as a geometric mean of representative samples collected during any 30-day consecutive period, nor shall more than 10 percent of samples collected during any 30-day consecutive period individually exceed 409 organisms per 100 ml. For assessment purposes, the 30-day consecutive period shall follow the calendar month. This standard shall apply only during the recreation season May 1 to September 30.
	pH (a)	**Class I and IA:** 7.0-9.0 (up to 10% of representative samples collected during any 3-year period may exceed this range, provided that lethal conditions are avoided).
		Class II and Class III: 6.0-9.0 (up to 10% of representative samples collected during any 3-year period may exceed this range, provided that lethal conditions are avoided).
108-95-2	Phenols (Total) (b)	0.3 mg/l (organoleptic criterion) (1-day arithmetic average)
7440-23-5	Sodium (b, c)	**Class 1:** 50 percent of total cations as milliequivalents per liter (mEq/l)
		Class 1A, II and III: 60 percent of total cations as mEq/l
18785-72-3	Sulfate (Total SO_4) (b)	**Class I:** 250 mg/l (30-day arithmetic average)
		Class1A and II: 450 mg/l (30-day arithmetic average)

		Class III: 750 mg/l (30-day arithmetic average)
	Sulfate (Total SO_4) (a, b)	**Site Specific:** 750 mg/l (maximum) applies to the Sheyenne River from its headwaters to .1 0 mile downstream from Baldhill Dam **131.10(b) requirement:** The water quality standards for the Red River and the portions of the Sheyenne River located downstream from the segment of the Sheyenne River to which the site-specific sulfate standard applies must continue to be maintained. The Sheyenne River from 0.1 mile downstream from Baldhill Dam to the confluence with the Red River shall not exceed 450 mg/l sulfate (total) 30-day arithmetic average, and the Red River shall not exceed 250 mg/l sulfate (total 30-day arithmetic average after mixing downstream from the confluence of the Sheyenne River. Regulated pollution control efforts must be developed to achieve compliance with these water quality standards.
	Temperature (a)	Eighty-five degrees Fahrenheit [29.44 degrees Celsius]. The maximum increase shall not be greater than 5 degrees Fahrenheit [2.78 degrees Celsius] above natural background conditions.
	Combined radium 226 and radium 228 (Total) (b)	5 pCi/l (30-day arithmetic average)
	Gross alpha particle activity, including radium 226 but excluding radon and uranium (b)	15 pCi/l (30-day arithmetic average)

1 CAS No. is the chemical abstract service registry number. The registry database contains records for specific substances identified by the chemical abstract service.

2 The standard for nitrates (N) is intended as ~~interim~~ benchmark concentration ~~guideline limit~~ when stream or lake specific data is insufficient to determine the concentration that will cause excessive plant growth (eutrophication). ~~Since each stream or lake has unique characteristics which determine the concentration of this constituent that will cause excessive plant growth and to set specific limitations on any waters of the state.~~ However, in no case shall the concentration for nitrate plus nitrite N exceed 10 mg/l for any waters used as a municipal or domestic drinking water supply.

3 Where the E. Coli criteria are exceeded and there are natural sources, the criteria may be considered attained, provided there is reasonable basis for concluding that the indicator bacteria density attributable to anthropogenic sources is consistent with the level of water quality required by the criteria. This may be the situation, for example, in headwater streams that are minimally affected by anthropogenic activities.

TABLE 2

WATER QUALITY CRITERIA[1]
(MICROGRAMS PER LITER)

		Aquatic Life Value Classes I, IA, II, III		Human Health Value	
CAS No.	Pollutant	Acute	Chronic	Classes I, IA, II[2]	Class III[3]
83-32-9	Acenaphthene			670	990
107-02-8	Acrolein	3.0	3.0	6	9
107-13-1	Acrylonitrile[4]			0.051	0.25
71-43-2	Benzene[4]			2.2	51
92-87-5	Benzidine[4]			0.000086	0.00020
63-25-2	Carbaryl (1-naphthyl-N-methycarbamate)	2.1	2.1		
56-23-5	Carbon tetrachloride[4] (Tetrachloromethane)			0.23	1.6
108-90-7	Chlorobenzene (Monochlorobenzene)			100[7]	1,600
2921-88-2	Chlorpyrifos	0.083	0.041		
120-82-1	1,2,4-Trichlorobenzene			35	70
118-74-1	Hexachlorobenzene[4]			0.00028	0.00029
107-06-2	1,2-Dichloroethane[4]			0.38	37
71-55-6	1,1,1-Trichloroethane			200[7]	
67-72-1	Hexachloroethane[4]			1.4	3.3
79-00-5	1,1,2-Trichloroethane[4]			0.59	16
79-34-5	1,1,2,2-Tetrachloroethane[4]			0.17	4.0
111-44-4	Bis(2-chloroethyl) ether[4]			0.030	0.53
91-58-7	2-Chloronaphthalene			1,000	1,600
88-06-2	2,4,6-Trichlorophenol[4]			1.4	2.4
59-50-7	p-Chloro-m-cresol (4-Chloro-3-methylphenol)			3000	
67-66-3	Chloroform (HM)[4] (Trichloromethane)			5.7	470
95-57-8	2-Chlorophenol			81	150
95-50-1	1,2-Dichlorobenzene[7]			420	1,300
541-73-1	1,3-Dichlorobenzene			320	960
106-46-7	1,4-Dichlorobenzene[7]			63	190
91-94-1	3,3'-Dichlorobenzidine[4]			0.021	0.028
75-35-4	1,1-Dichloroethylene[4]			7[7]	7,100
156-60-5	1,2-trans-Dichloroethylene[7]			100[7]	10,000
120-83-2	2,4-Dichlorophenol			77	290
542-75-6	1,3-Dichloropropylene (1,3-Dichloropropene) (cis and trans isomers)			0.34	21
78-87-5	1,2-Dichloropropane			0.50	15
105-67-9	2,4-Dimethylphenol			380	850
121-14-2	2,4-Dinitrotoluene[4]			0.11	3.4
122-66-7	1,2-Diphenylhydrazine[4]			0.036	0.20

		Aquatic Life Value Classes I, IA, II, III		Human Health Value	
CAS No.	Pollutant	Acute	Chronic	Classes I, IA, II[2]	Class III[3]
100-41-4	Ethylbenzene[7]			530	2,100
206-44-0	Fluoranthene			130	140
108-60-1	Bis(2-chloroisopropyl) ether			1400	65,000
75-09-2	Methylene chloride (HM)[4] (Dichloromethane)			4.6	590
74-83-9	Methyl bromide (HM) (Bromomethane)			47	1,500
75-25-2	Bromoform (HM)[5] (Tribromomethane)			4.3	140
75-27-4	Dichlorobromomethane (HM)[5]			0.55	17
124-48-1	Chlorodibromomethane (HM)[5]			0.40	13
87-68-3	Hexachlorobutadiene[4]			0.44	18
77-47-4	Hexachlorocyclopentadiene			40	1,100
78-59-1	Isophorone[4]			35	960
98-95-3	Nitrobenzene			17	690
51-28-5	2,4-Dinitrophenol			69	5,300
534-52-1	4,6-Dinitro-o-cresol (4,6-Dinitro-2-methylphenol)			13	280
62-75-9	N-Nitrosodimethylamine[4]			0.00069	3.0
86-30-6	N-Nitrosodiphenylamine[4]			3.3	6.0
621-64-7	N-Nitrosodi-n-propylamine[4]			0.005	0.51
87-86-5	Pentachlorophenol	19[8]	15[8]	0.27	3.0
108-95-2	Phenol			10,000	860,000
117-81-7	Bis(2-ethylhexyl)phthalate[4]			1.2	2.2
85-68-7	Butyl benzyl phthalate			1,500	1,900
84-74-2	Di-n-butyl phthalate			2,000	4,500
84-66-2	Diethyl phthalate			17,000	44,000
131-11-3	Dimethyl phthalate			270,000	1,100,000
56-55-3	Benzo(a)anthracene (PAH)[4] (1,2-Benzanthracene)			0.0038	0.018
50-32-8	Benzo(a)pyrene (PAH)[4] (3,4-Benzopyrene)			0.0038	0.018
205-99-2	Benzo(b)fluoranthene (PAH)[4] (3,4-Benzofluoranthene)			0.0038	0.018
207-08-9	Benzo(k)fluoranthene (PAH)[4] (11,12-Benzofluoranthene)			0.0038	0.018
218-01-9	Chrysene (PAH)[4]			0.0038	0.018
120-12-7	Anthracene (PAH)[5]			8,300	40,000
86-73-7	Fluorene (PAH)[5]			1,100	5,300
53-70-3	Dibenzo(a,h)anthracene (PAH)[4] (1,2,5,6-Dibenzanthracene)			0.0038	0.018
193-39-5	Indeno(1,2,3-cd)pyrene (PAH)[4]			0.0038	0.018
129-00-0	Pyrene (PAH)[5]			830	4,000
127-18-4	Tetrachloroethylene[4]			0.69	3.3
108-88-3	Toluene			1,000[7]	15,000
79-01-6	Trichloroethylene[4]			2.5	30

		Aquatic Life Value Classes I, IA, II, III		Human Health Value	
CAS No.	Pollutant	Acute	Chronic	Classes I, IA, II[2]	Class III[3]
75-01-4	Vinyl chloride[4] (Cloroethylene)			0.025	2.4
309-00-2	Aldrin[4]	1.5		0.000049	0.000050
60-57-1	Dieldrin[4]	0.24	0.056	0.000052	0.000054
57-74-9	Chlordane[4]	1.2	0.0043	0.00080	0.00081
50-29-3	4,4'-DDT[4]	0.55[12]	0.001[12]	0.00022	0.00022
75-55-9	4,4'-DDE[4]			0.00022	0.00022
72-54-8	4,4'-DDD[4]			0.00031	0.00031
959-98-8	alpha-Endosulfan	0.11[11]	0.056[11]	62	89
33213-65-9	beta-Endosulfan	0.11[11]	0.056[11]	62	89
1031-07-8	Endosulfan sulfate			62	89
72-20-8	Endrin	0.09	0.036	0.059	0.060
7421-93-4	Endrin aldehyde			0.29	0.30
76-44-8	Heptachlor[4]	0.26	0.0038	0.000079	0.000079
1024-57-3	Heptachlor epoxide[4]	0.26	0.0038	0.000039	0.000039
319-84-6	alpha-BHC[4] (Hexachlorocyclohexane-alpha)			0.0026	0.0049
319-85-7	beta-BHC[4] (Hexachlorocyclohexane-beta)			0.0091	0.017
58-89-9	gamma-BHC (Lindane)[4] (Hexachlorocyclohexane-gamma)	0.95		0.2[7]	1.8
319-86-8	delta-BHC[4] (Hexachlorocyclohexane-delta)				
53469-21-9	PCB 1242 (Arochlor 1242)[4]		0.014[10]	0.000064[10]	0.000064[10]
11097-69-1	PCB-1254 (Arochlor 1254)[4]		0.014[10]	0.000064[10]	0.000064[10]
11104-28-2	PCB-1221 (Arochlor 1221)[4]		0.014[10]	0.000064[10]	0.000064[10]
11141-16-5	PCB-1232 (Arochlor 1232)[4]		0.014[10]	0.000064[10]	0.000064[10]
12672-29-6	PCB-1248 (Arochlor 1248)[4]		0.014[10]	0.000064[10]	0.000064[10]
11096-82-5	PCB-1260 (Arochlor 1260)[4]		0.014[10]	0.000064[10]	0.000064[10]
12674-11-2	PCB-1016 (Arochlor 1016)[4]		0.014[10]	0.000064[10]	0.000064[10]
8001-35-2	Toxaphene[4]	0.73	0.0002	0.00028	0.00028
7440-36-0	Antimony			5.6	640
7440-38-2	Arsenic[7]	340[9]	150[9]	10[7]	
1332-21-4	Asbestos[4,7]			7,000,000 f/l	7000000 f/l
7440-41-7	Beryllium[4]			4[7]	
7440-43-9	Cadmium	2.1[6,15]	0.27[6,15]	5[7]	
16065-83-1	Chromium (III)	1800[6,15]	86[6,15]	100(total)[7]	
18540-29-9	Chromium (VI)	16	11	100(total)[7]	
7440-50-8	Copper	14.0[6,15]	9.3[6,15]	1000	
57-12-5	Cyanide (total)	22	5.2	140	140
7439-92-1	Lead	82[6]	3.2[6]	15[7]	
7439-97-6	Mercury	1.7	0.012	0.050	0.051
7440-02-0	Nickel	470[6,15]	52[6,15]	100[7]	4,200
7782-49-2	Selenium	20	5	50[7]	
7440-22-4	Silver	3.8[6,15]			

		Aquatic Life Value Classes I, IA, II, III		Human Health Value	
CAS No.	Pollutant	Acute	Chronic	Classes I, IA, II[2]	Class III[3]
7440-28-0	Thallium			0.24	0.47
7440-66-6	Zinc	120[6,15]	120[6,15]	7,400	26,000
688-73-3	Tributyltin	0.46	0.072		
1746-01-6	Dioxin (2,3,7,8-TCDD)[4]			5.0E-9	5.1E-9
15972-60-8	Alachlor			2[7]	
1912-24-9	Atrazine			3[7]	
56-38-2	Parathion	0.065	0.013		
1563-66-2	Carbofuran			40[7]	
94-75-7	2,4-D			70[7]	
75-99-0	Dalapon			200[7]	
103-23-1	Di(2-ethylhexyl)adipate			400[7]	
333-41-5	Diazinon	0.17	0.17		
84852-15-3	Nonylphenol (Isomer mixture)[13]	28	6.6		
67708-83-2	Dibromochloropropane			0.2[7]	
156-59-2	Dichloroethylene (cis-1,2-)			70[7]	
88-85-7	Dinoseb			7[7]	
85-00-7	Diquat			20[7]	
145-73-3	Endothall			100[7]	
106-93-4	Ethylene dibromide (EDB)			0.05[7]	
1071-83-6	Glyphosate			700[7]	
72-43-5	Methoxychlor			40[7]	
23135-22-0	Oxamyl (Vydate)			200[7]	
1918-02-1	Picloram			500[7]	
122-34-9	Simazine			4[7]	
100-42-5	Styrene			100[7]	
1330-20-7	Xylenes			10,000[7]	
7782-41-4	Fluoride			4,000[7]	
14797-65-0	Nitrite			1,000[7]	
12587-47-2	Beta/photon emitters			4 mrem/yr[7]	
7440-61-1	Uranium			30[7]	
15541-45-4	Bromate			10[7]	
14998-27-7	Chlorite			1,000[7]	
	Haloacetic acids[14]			60[7]	

TABLE 2

WATER QUALITY CRITERIA[1] (MICROGRAMS PER LITER)

		Aquatic Life Value Classes I, IA, II, III		Human Health Value	
CAS No.	Pollutant (Compounds)	Acute	Chronic	Classes I, IA, II[2]	Class III[3]
71-55-6	1,1,1-Trichloroethane	-	-	~~200~~ 10,000[7]	200,000
79-00-5	1,1,2-Trichloroethane[4]	-	-	~~0.59~~ 0.55	~~16~~ 8.9

79-34-5	1,1,2,2-Tetrachloroethane[4]	-	-	~~0.17~~ 0.2	~~4~~ 3
75-35-4	1,1-Dichloroethylene[4]	-	-	~~7~~ 300	~~7,100~~ 20,000
156-60-5	1,2-trans-Dichloroethylene[7]	-	-	100	~~10,000~~ 4,000
120-82-1	1,2,4-Trichlorobenzene	-	-	~~35~~ 0.071	~~70~~ 0.076
95-50-1	1,2-Dichlorobenzene[7]	-	-	~~420~~ 1,000	~~1,300~~ 3,000
541-73-1	1,3-Dichlorobenzene	-	-	~~320~~ 7	~~960~~ 10
106-46-7	1,4-Dichlorobenzene[7]	-	-	~~63~~ 300	~~190~~ 900
107-06-2	1,2-Dichloroethane[4]	-	-	~~0.38~~ 9.9	~~37~~ 650
78-87-5	1,2-Dichloropropane	-	-	~~0.50~~ 0.90	~~15~~ 31
542-75-6	1,3-Dichloropropylene (1,3-Dichloropropene) (cis and trans isomers)	-	-	~~0.34~~ 0.27	~~21~~ 12
122-66-7	1,2-Diphenylhydrazine[4]	-	-	~~0.036~~ 0.03	0.20
121-14-2	2,4-Dinitrotoluene[4]	-	-	~~0.11~~ 0.049	~~3.4~~ 1.7
95-57-8	2-Chlorophenol	-	-	~~81~~ 30	~~150~~ 800
120-83-2	2,4-Dichlorophenol	-	-	~~77~~ 10	~~290~~ 60
88-06-2	2,4,6-Trichlorophenol[4]	-	-	~~1.4~~ 1.5	~~2.4~~ 2.8
91-58-7	2-Chloronaphthalene	-	-	~~1,000~~ 800	~~1,600~~ 1,000
91-94-1	3,3'-Dichlorobenzidine[4]	-	-	~~0.021~~ 0.049	~~0.028~~ 0.15
105-67-9	2,4-Dimethylphenol	-	-	~~380~~ 100	~~850~~ 3,000
51-28-5	2,4-Dinitrophenol	-	-	~~69~~ 10	~~5,300~~ 300
94-75-7	2,4-D	-	-	~~70[7]~~ 1,300	12,000
72-54-8	4,4'-DDD[4]	-	-	~~0.00031~~ 0.00012	~~0.00031~~ 0.00012
75-55-9	4,4'-DDE[4]	-	-	~~0.00022~~ 0.000018	~~0.00022~~ 0.000018
50-29-3	4,4'-DDT[4]	0.55[12]	0.001[12]	~~0.00022~~ 0.000030	~~0.00022~~ 0.000030
534-52-1	~~4,6-Dino-o-cresol (4,6-Dinitro-2-methylphenol)~~ 2-Methyl-4,6-Dinitrophenol	-	-	~~13~~ 2	~~280~~ 30
59-50-7	3-Methyl-4-Chlorophenol			~~3,000~~ 500	2,000
83-32-9	Acenaphthene	-	-	~~670~~ 70	~~990~~ 90
107-02-8	Acrolein	3	3	~~6~~ 3	~~9~~ 400

107-13-1	Acrylonitrile[4]	-	-	~~0.051~~ 0.061	~~0.25~~ 7.0
15972-60-8	Alachlor	-	-	2[7]	-
309-00-2	Aldrin[4]	1.5	-	~~0.000049~~ 7.7E-7	~~0.000050~~ 7.7E-7
319-84-6	alpha-BHC4 (Hexachlorocyclohexane-alpha)	-	-	~~0.0026~~ 0.00036	~~0.0049~~ 0.00039
319-85-7	beta-BHC4 (Hexachlorocyclohexane-beta)	-	-	~~0.0091~~ 0.008	~~0.017~~ 0.014
58-89-9	gamma-BHC (Lindane)[4] (Hexachlorocyclohexane-gamma)	0.95	-	~~0.2[7]~~ 4.2[7]	~~1.8~~ 4.4
959-98-8	alpha-Endosulfan	0.11[11]	0.056[11]	~~62~~ 20	~~89~~ 30
33213-65-9	beta-Endosulfan	0.11[11]	0.056[11]	~~62~~ 20	~~89~~ 40
120-12-7	Anthracene (PAH)[5]	-	-	~~8,300~~ 300	~~40,000~~ 400
1332-21-4	Asbestos[4 7]	-	-	7,000,000 f/l	7,000,000 f/l
1912-24-9	Atrazine	-	-	3[7]	-
71-43-2	Benzene[4]	-	-	~~2.2~~ 2.1	~~51~~ 58
92-87-5	Benzidine[4]	-	-	~~0.000086~~ 0.00014	~~0.00020~~ 0.011
56-55-3	Benzo(a)anthracene (PAH)4 (1,2-Benzanthracene)	-	-	~~0.0038~~ 0.0012	~~0.018~~ 0.0013
50-32-8	Benzo(a)pyrene (PAH)4 (3,4-Benzopyrene)	-	-	~~0.0038~~ 0.00012	~~0.018~~ 0.00013
205-99-2	Benzo(b)fluoranthene (PAH)4 (3,4-Benzofluoranthene)	-	-	~~0.0038~~ 0.0012	~~0.018~~ 0.0013
207-08-9	Benzo(k)fluoranthene (PAH)4 (11,12-Benzofluoranthene)	-	-	~~0.0038~~ 0.012	~~0.018~~ 0.013
12587-47-2	Beta/photon emitters	-	-	4 mrem/yr[7]	-
111-44-4	Bis(2-chloroethyl) ether[4]	-	-	0.030	~~0.53~~ 2.2
108-60-1	Bis(2-chloro -1-Methylethyl ~~isopropyl~~) ether	-	-	~~1400~~ 200	~~65,000~~ 4,000
117-81-7	Bis(2-ethylhexyl) phthalate[4]	-	-	~~1.2~~ 0.32	~~2.2~~ 0.37
15541-45-4	Bromate	-	-	10[7]	-
75-25-2	Bromoform (HM)[5] (Tribromomethane)	-	-	~~4.3~~ 7.0	~~140~~ 120
85-68-7	Butyl benzyl phthalate	-	-	~~1,500~~ 0.10	~~1,900~~ 0.10
63-25-2	Carbaryl (1-naphthyl-N-methycarbamate)	2.1	2.1	-	-
1563-66-2	Carbofuran	-	-	40[7]	-
56-23-5	Carbon tetrachloride4 (Tetrachloromethane)	-	-	~~0.23~~ 0.40	~~1.6~~ 5

57-74-9	Chlordane[4]	1.2	0.0043	~~0.00080~~ 0.00031	~~0.00081~~ 0.00032
14998-27-7	Chlorite	-	-	1,000[7]	-
108-90-7	Chlorobenzene (Monochlorobenzene)	-	-	100[7]	~~1,600~~ 800
124-48-1	Chlorodibromomethane (HM)[5]	-	-	~~0.40~~ 0.80	~~13~~ 21
67-66-3	Chloroform (HM)4 (Trichloromethane)	-	-	~~5.7~~ 60	~~470~~ 2,000
2921-88-2	Chlorpyrifos	0.083	0.041	-	-
218-01-9	Chrysene (PAH)[4]	-	-	~~0.0038~~ 0.12	~~0.018~~ 0.13
57-12-5	Cyanide (total)	22	5.2	~~140~~ 4	~~140~~ 400
75-99-0	Dalapon	-	-	200[7]	-
103-23-1	Di(2-ethylhexyl)adipate	-	-	400[7]	-
333-41-5	Diazinon	0.17	0.17	-	-
53-70-3	Dibenzo(a,h)anthracene (PAH)4 (1,2,5,6-Dibenzanthracene)	-	-	~~0.0038~~ 0.00012	~~0.018~~ 0.00013
67708-83-2	Dibromochloropropane	-	-	0.2[7]	-
75-27-4	Dichlorobromomethane (HM)[5]	-	-	~~0.55~~ 0.95	~~17~~ 27
156-59-2	Dichloroethylene (cis-1,2-)	-	-	70[7]	-
60-57-1	Dieldrin[4]	0.24	0.056	~~0.000052~~ 1.2E-6	~~0.000054~~ 1.2E-6
84-66-2	Diethyl phthalate	-	-	~~17,000~~ 600	~~44,000~~ 600
131-11-3	Dimethyl phthalate	-	-	~~270,000~~ 2,000	~~1,100,000~~ 2,000
84-74-2	Di-n-butyl phthalate	-	-	~~2,000~~ 20	~~4,500~~ 30
88-85-7	Dinoseb	-	-	7[7]	-
1746-01-6	Dioxin (2,3,7,8-TCDD)[4]	-	-	5.00E-09	5.10E-09
85-00-7	Diquat	-	-	20[7]	-
1031-07-8	Endosulfan sulfate	-	-	~~62~~ 20	~~89~~ 40
145-73-3	Endothall	-	-	100[7]	-
72-20-8	Endrin	~~0.09~~ 0.086	0.036	~~0.059~~ 0.03	~~0.060~~ 0.03
7421-93-4	Endrin aldehyde	-	-	~~0.29~~ 1	~~0.30~~ 1
100-41-4	Ethylbenzene[7]	-	-	~~530~~ 68	~~2,100~~ 130

106-93-4	Ethylene dibromide (EDB)			0.05[7]	
206-44-0	Fluoranthene			~~130~~ 20	~~140~~ 20
86-73-7	Fluorene (PAH)5			~~1,100~~ 50	~~5,300~~ 70
1071-83-6	Glyphosate			700[7]	
	Halocetic acids[14]			60[7]	
1024-57-3	Heptachlor epoxide4	0.26	0.0038	~~0.000039~~ 0.000032	~~0.000039~~ 0.000032
76-44-8	Heptachlor[4]	0.26	0.0038	~~0.000079~~ 0.0000059	~~0.000079~~ 0.0000059
118-74-1	Hexachlorobenzene[4]			~~0.00028~~ 0.000079	~~0.00029~~ 0.000079
87-68-3	Hexachlorobutadiene[4]			~~0.44~~ 0.01	~~18~~ 0.01
77-47-4	Hexachlorocyclopentadiene			~~40~~ 4	~~1,100~~ 4
67-72-1	Hexachloroethane[4]			~~1.4~~ 0.10	~~3.3~~ 0.10
193-39-5	Indeno (1,2,3-cd) pyrene (PAH)[4]			~~0.0038~~ 0.0012	~~0.018~~ 0.0013
78-59-1	Isophorone[4]			~~35~~ 34	~~960~~ 1,800
72-43-5	Methoxychlor			~~40[7]~~ 0.02	0.02
74-83-9	Methyl bromide (HM) (Bromomethane)			~~47~~ 100	~~1,500~~ 10,000
75-09-2	Methylene chloride (HM)4 (Dichloromethane)			~~4.6~~ 20	~~590~~ 1,000
98-95-3	Nitrobenzene			~~17~~ 10	~~690~~ 600
62-75-9	N-Nitrosodimethylamine[4]			0.00069	3
621-64-7	N-Nitrosodi-n-propylamine[4]			0.005	0.51
86-30-6	N-Nitrosodiphenylamine[4]			3.3	6
84852-15-3	Nonylphenol (Isomer mixture)[13]	28	6.6		
23135-22-0	Oxamyl (Vydate)			200[7]	
56-38-2	Parathion	0.065	0.013		
53469-21-9	PCB 1242 (Arochlor 1242)[4]		0.014[10]	0.000064[10]	0.000064[10]
~~12674-11-2~~ 126764-11-2	PCB-1016 (Arochlor 1016)[4]		0.014[10]	0.000064[10]	0.000064[10]
11104-28-2	PCB-1221 (Arochlor 1221)[4]		0.014[10]	0.000064[10]	0.000064[10]
11141-16-5	PCB-1232 (Arochlor 1232)[4]		0.014[10]	0.000064[10]	0.000064[10]

12672-29-6	PCB-1248 (Arochlor 1248)[4]	-	0.014[10]	0.000064[10]	0.000064[10]
11097-69-1	PCB-1254 (Arochlor 1254)[4]	-	0.014[10]	0.000064[10]	0.000064[10]
11096-82-5	PCB-1260 (Arochlor 1260)[4]	-	0.014[10]	0.000064[10]	0.000064[10]
~~59-50-7~~	~~p-Chloro-m-cresol (4-chloro-3-methylphenol)~~	-	-	~~3,000~~ 500	~~2,000~~
87-86-5	Pentachlorophenol	19[8]	15[8]	~~0.27~~ 0.03	~~3~~ 0.04
108-95-2	Phenol	-	-	~~10,000~~ 4,000	~~860,000~~ 300,000
1918-02-1	Picloram	-	-	500[7]	-
129-00-0	Pyrene (PAH)[5]	-	-	~~830~~ 20	~~4,000~~ 30
122-34-9	Simazine	-	-	4[7]	-
100-42-5	Styrene	-	-	100[7]	-
127-18-4	Tetrachloroethylene[4]	-	-	~~0.69~~ 10	~~3.3~~ 29
108-88-3	Toluene	-	-	~~1,000[7]~~ 57	~~15,000~~ 520
8001-35-2	Toxaphene[4]	0.73	0.0002	~~0.00028~~ 0.0007	~~0.00028~~ 0.00071
688-73-3	Tributyltin	0.46	0.072	-	-
79-01-6	Trichloroethylene[4]	-	-	~~2.5~~ 0.60	~~30~~ 7
75-01-4	Vinyl chloride4 (Cloroethylene)	-	-	~~0.025~~ 0.022	~~2.4~~ 1.6
1330-20-7	Xylenes	-	-	10,000[7]	-
		Aquatic Life Value Classes I, IA, II, III		Human Health Value	
CAS No.	Pollutant (Elements)	Acute	Chronic	Classes I, IA, II[2]	Class III[3]
7440-36-0	Antimony			5.6	640
7440-38-2	Arsenic[7]	340[9]	150[9]	10[7]	
7440-41-7	Beryllium[4]			4[7]	
7440-43-9	Cadmium	~~2.1~~[6,15] 1.8[6,15]	~~0.27~~[6,15] 0.72[6,15]	5[7]	
16065-83-1	Chromium (III)	1800[6,15]	86[6,15]	100(total)[7]	
18540-29-9	Chromium (VI)	16	11	100(total)[7]	
7440-50-8	Copper	14.0[6,15,16]	9.3[6,15,16]	1000	
7782-41-4	Fluoride			4,000[7]	

7439-92-1	Lead	82[6]	3.2[6]	15[7]	
7439-97-6	Mercury	1.7	0.012	0.050	0.051
7440-02-0	Nickel	470[6,15]	52[6,15]	100[7]	4,200
7782-49-2	Selenium	20	5	50[7]	
7440-22-4	Silver	3.8[6,15]			
7440-28-0	Thallium			0.24	0.47
7440-61-1	Uranium			30[7]	
7440-66-6	Zinc	120[6,15]	120[6,15]	7,400	26,000

[1] Except for the aquatic life values for metals, the values given in this appendix refer to the total (dissolved plus suspended) amount of each substance. For the aquatic life values for metals, the values refer to the total recoverable method for ambient metals analyses.

[2] Based on two routes of exposure - ingestion of contaminated aquatic organisms and drinking water.

[3] Based on one route of exposure - ingestion of contaminated aquatic organisms only.

[4] Substance classified as a carcinogen, with the value based on an incremental risk of one additional instance of cancer in one million persons.

[5] Chemicals which are not individually classified as carcinogens but which are contained within a class of chemicals, with carcinogenicity as the basis for the criteria derivation for that class of chemicals; an individual carcinogenicity assessment for these chemicals is pending.

[6] Hardness dependent criteria. Value given is an example only and is based on a $CaCO_3$ hardness of 100 mg/l. Criteria for each case must be calculated using the following formula:

For the Criterion Maximum Concentration (CMC):

Cadmium	CMC = ~~e~~$^{(1.0166}$0.9789[ln hardness)] - ~~3.9240~~ 3.866)
Chromum (III)	CMC = ~~e~~$^{(0.8190[ln (hardness)] +3.7256)}$
Copper	CMC = ~~e~~$^{(0.9422[ln (hardness)] - 1.7000)}$
Lead	CMC = ~~e~~$^{(1.2730[ln (hardness)] - 1.4600)}$
Nickel	CMC = ~~e~~$^{(0.8460[ln (hardness)] +2.2550)}$
Silver	CMC = ~~e~~$^{(1.7200[ln (hardness)] - 6.5900)}$
Zinc	CMC = ~~e~~$^{(0.8473[ln (hardness)] +0.8840)}$

CMC = Criterion ~~Continuous~~Maximum Concentration (acute exposure value)
The threshold value at or below which there should be no unacceptable effects to freshwater aquatic organisms and their uses if the one-hour concentration does not exceed that CMC value more than once every three years on the average.

For the Criterion Continuous Concentration (CCC):

Cadmium	C~~M~~CC = ~~e~~$^{(0.7409}$0.7977[ln (hardness)] - ~~4.7190~~ 3.909)
Chromium (III)	C~~M~~CC = ~~e~~$^{(0.8190[ln (hardness)] +0.6848)}$
Copper	C~~M~~CC = ~~e~~$^{(0.8545[ln (hardness)] - 1.7020)}$
Lead	C~~M~~CC = ~~e~~$^{(1.2730[ln (hardness)] - 4.7050)}$
Nickel	C~~M~~CC = ~~e~~$^{(0.8460[ln (hardness)] +0.0584)}$
Silver	No CCC criterion for silver
Zinc	C~~M~~CC = ~~e~~$^{(0.8473[ln (hardness)] +0.8840)}$

CCC = Criterion Continuous Concentration (chronic exposure value)
The threshold value at or below which there should be no unacceptable effects to freshwater aquatic organisms and their uses if the four-day concentration does not exceed that CCC value more than once every three years on the average.

[7] Safe Drinking Water Act (MCL).

[8] Freshwater aquatic life criteria for pentachlorophenol are expressed as a function of pH. Values displayed in the table correspond to a pH of 7.8 and are calculated as follows:

CMC =exp [1.005 (pH) - 4.869] CCC = exp [1.005 (pH) - 5.134]

[9] This criterion applies to total arsenic.

[10] This criterion applies to total PCBs (i.e., the sum of all congener or all isomer or homolog or Arochlor analyses).

[11] This criterion applies to the sum of alpha-endosulfan and beta-endosulfan.

[12] This criterion applies to DDT and its metabolites (i.e., the total concentration of DDT and its metabolites should not exceed this value).

[13] The nonylphenol criteria address CAS numbers 84852-15-3 and 25154-52-3.

[14] The criterion is for a total measurement of 5 haloacetic acids, dichloroacetic acid, trichloroacetic acid, monochloroacetic acid, bromoacetic acid, and dibromoacetic acid.

[15] Hardness values shall be no greater than 400 mg/l. For waters with hardness concentrations greater than 400 mg/l. The actual ambient hardness may be used where a site-specific water effect ratio has been determined consistent with the environmental protection agency's water effect ratio procedure.

[16] The department will recognize the biotic ligand model as an appropriate tool for developing site specific limits for copper as well as the Water-Effects Ratio (WER) method.

Section 33-16-02.1-10 is amended as follows:

33-16-02.1-10. Ground water classifications and standards.

1. Class I ground waters. Class I ground waters ~~shall have~~ are those with a total dissolved solids concentration of less than 10,000 mg/l.The minimum conditions described in section 33-16-2.1-08(1) apply. Class I ground waters are not exempt under the North Dakota underground injection control program in section 33-25-01-05.

2. Class II ground waters. Class II ground waters ~~shall have~~are those with a total dissolved solids concentration of 10,000 mg/l or greater. Class II ground waters are exempt under the North Dakota underground injection control program in section 33-25-01-05.

History: Effective June 1, 2001; amended effective April 1, 2014; amended effective , 2018.
General Authority: NDCC 61-28-04, 61-28-05
Law Implemented: NDCC 61-28-04

APPENDIX I

STREAM CLASSIFICATIONS

The following intrastate and interstate streams are classified as the class of water quality which is to be maintained in the specified stream or segments noted. ~~There are a number of minor or intermittently flowing watercourses, unnamed creeks, or draws, etc., which are not listed.~~ All tributaries, minor or intermittently flowing water courses, unnamed creeks, or draws not specifically mentioned are classified as Class III streams.

RIVER BASINS, SUBBASINS, AND TRIBUTARIES	CLASSIFACTION
Missouri River, including Lake Sakakawea and Oahe Reservoir	I
Yellowstone	I
Little Muddy Creek near Williston	II
White Earth River	II
Little Missouri River	II
Knife River	II
Spring Creek	IA
Square Butte Creek below Nelson Lake	IA
Heart River	IA
Green River	IA
Antelope Creek	II
Muddy Creek	II
Apple Creek	II
Cannonball River	II
Cedar Creek	II
Beaver Creek near Linton	II
Grand River	IA
Spring Creek	II
Souris River	IA
Des Lacs River	II
Willow Creek	II
Deep River	III
Mauvais Coulee	I
James River	IA

RIVER BASINS, SUBBASINS, AND TRIBUTARIES	CLASSIFACTION
Pipestem	IA
Cottonwood Creek	II
Beaver Creek	II
Elm River	II
Maple River	II
Bois de Sioux	I
Red River	I
Wild Rice River	II
Antelope Creek	III
Sheyenne River (except as noted below)	IA
Baldhill Creek	II
Maple River	II
Rush River	III
Elm River	II
Goose River	IA
Turtle River	II
Forest River	II
North Branch	III
Park River	II
North Branch	III
South Branch	II
Middle Branch	III
Cart Creek	III
Pembina River	IA
Tongue River	II

The Sheyenne River from its headwaters to 0.1 mile downstream from Baldhill Dam is not classified for municipal or domestic use.

APPENDIX II

LAKE AND RESERVOIR CLASSIFICATION

Lakes and reservoirs are classified according to the water characteristics which are to be maintained in the specified lakes and reservoirs. The physical and chemical criteria ~~beneficial water uses and parameter limitations designed~~ for ~~Class~~ I streams shall apply to all classified lakes and reservoirs listed. For lakes and other lentic waterbodies not listed, the ~~parameters~~ physical and chemical ~~and~~ criteria designated for Class III streams shall apply.

Class 4.

COUNTY	LAKE	CLASSIFICATION
Adams	Mirror Lake	3
Adams	N. Lemmon Lake	1
Barnes	Lake Ashtabula	3
Barnes	Moon Lake	2
Barnes	Clausen Springs	3
Benson	Wood Lake	2
Benson	Graves	3
Benson	Reeves	3
Bottineau	Lake Metigoshe	2
Bottineau	Long Lake	2
Bottineau	Pelican Lake	3
Bottineau	Carbury Dam	2
Bottineau	Cassidy Lake	4
Bottineau	Strawberry Lake	2
Bowman	Bowman-Haley Dam	3

COUNTY	LAKE	CLASSIFICATION
Bowman	Gascoyne Lake	3
Bowman	Kalina Dam	3
Bowman	Lutz Dam	2
Bowman	Spring Lake	3
Burke	Powers Lake	3
Burke	Short Creek Dam	2
Burke	Smishek Dam	2
Burke	Northgate Dam	2
Burleigh	McDowell Dam	3
Burleigh	Mitchell Lake	3
Burleigh	New Johns Lake	2
Cass	Casselton Reservoir	3
Cass	Brewer Lake	2
Cavalier	Mt. Carmel Dam	2
Dickey	Moores Lake	3
Dickey	Pheasant Lake	3
Dickey	Wilson Dam	3
Divide	Baukol-Noonan Dam	2

COUNTY	LAKE	CLASSIFICATION
Divide	Baukol-Noonan East Mine Pond	2
Divide	Skjermo Dam	2
Dunn	Lake Ilo	3
Eddy	Battle Lake	3
Eddy	Warsing Dam	3
Emmons	Braddock Dam	3
Emmons	Nieuwsma Dam	2
Emmons	Rice Lake	3
Foster	Juanita Lake	3
Golden Valley	South Buffalo Gap Dam	4
Golden Valley	Camel Hump Dam	1
Golden Valley	Odland Dam	3
Grand Forks	Fordville Dam	2
Grand Forks	Kolding Dam	3
Grand Forks	Larimore Dam	2
~~Grant~~ Grand Forks	Niagara Dam	3
Grant	Heart Butte Dam (Lake Tschida)	2

COUNTY	LAKE	CLASSIFICATION
~~Grant~~	~~Niagara Dam~~	~~3~~
Grant	Raleigh Reservoir	2
Grant	Sheep Creek Dam	2
Griggs	Carlson-Tande Dam	3
Griggs	Red Willow Lake	2
Hettinger	Blickensderfer Dam	2
Hettinger	Castle Rock Dam	4
Hettinger	Indian Creek	2
Hettinger	Larson Lake	3
Hettinger	Mott Watershed Dam	3
Kidder	Alkaline Lake	2
Kidder	Cherry Lake	3
Kidder	Crystal Springs	3
Kidder	Frettim Lake	2
Kidder	George Lake	5
Kidder	Horsehead Lake	2
Kidder	Lake Isabel	3
Kidder	Lake Josephine	2

COUNTY	LAKE	CLASSIFICATION
Kidder	Lake Williams	3
Kidder	Round Lake	2
LaMoure	Heinrich-Martin Dam	3
LaMoure	Kalmbach Lake	3
LaMoure	Kulm-Edgeley Dam	3
LaMoure	Lake LaMoure	3
LaMoure	Lehr Dam	3
LaMoure	Limesand-Seefeldt Dam	3
LaMoure	Schlecht-Thom Dam	3
LaMoure	Schlecht-Weix Dam	3
Logan	Beaver Lake	3
Logan	Mundt Lake	3
Logan	Rudolph Lake	3
McHenry	Cottonwood Lake	3
McHenry	George Lake	3
McHenry	Round Lake	3
McHenry	Buffalo Lodge Lake	3
McIntosh	Blumhardt Dam	2

COUNTY	LAKE	CLASSIFICATION
McIntosh	Clear Lake	3
McIntosh	Coldwater Lake	3
McIntosh	Dry Lake	2
McIntosh	Green Lake	2
McIntosh	Lake Hoskins	3
McKenzie	Arnegard Dam	4
McKenzie	Leland Dam	2
McKenzie	Sather Dam	2
McLean	Brush Lake	3
McLean	Crooked Lake	3
McLean	Custer Mine Pond	2
McLean	East Park Lake	2
McLean	Lake Audubon	2
McLean	Lake Brekken	2
McLean	Lake Holmes	2
McLean	Lightning Lake	1
McLean	Long Lake	4
McLean	Riverdale Spillway Lake	1

COUNTY	LAKE	CLASSIFICATION
McLean	Strawberry Lake	3
McLean	West Park Lake	2
Mercer	Harmony Lake	3
Morton	Crown Butte Dam	3
Morton	Danzig Dam	3
Morton	Fish Creek Dam	1
Morton	Harmon Lake	3
Morton	Nygren Dam	2
Morton	Sweetbriar Dam	2
Mountrail	Clearwater Lake	3
Mountrail	Stanley City Pond	3
Mountrail	Stanley Reservoir	3
Mountrail	White Earth Dam	2
Nelson	McVille Dam	2
Nelson	Tolna Dam	2
Nelson	Whitman Dam	2
Oliver	East Arroda Lake	2
Oliver	Nelson Lake	3

COUNTY	LAKE	CLASSIFICATION
Oliver	West Arroda Lake	2
Pembina	Renwick Dam	3
Pierce	Balta Dam	3
Pierce	Buffalo Lake	3
Ramsey	Cavanaugh Lake	3
Ramsey	Devils Lake	2
Ransom	Dead Colt Creek Dam	3
Renville	Lake Darling	2
Richland	Lake Elsie	3
Richland	Mooreton Pond	3
Rolette	Belcourt Lake	2
Rolette	Carpenter Lake	2
Rolette	Dion Lake	2
Rolette	Gordon Lake	2
Rolette	Gravel Lake	2
Rolette	Hooker Lake	2
Rolette	Island Lake	3
Rolette	Jensen Lake	3

COUNTY	LAKE	CLASSIFICATION
Rolette	School Section Lake	2
Rolette	Upsilon Lake	2
Rolette	Shutte Lake	2
Sargent	Alkali Lake	3
Sargent	Buffalo Lake	3
Sargent	Lake Tewaukon	3
Sargent	Silver Lake	3
Sargent	Sprague Lake	3
Sheridan	Hecker Lake	2
Sheridan	South McClusky Lake (Hoffer Lake)	2
Sioux	Froelich Dam	2
Slope	Cedar Lake	3
Slope	Davis Dam	2
Slope	Stewart Lake	3
Stark	Belfield Pond	1
Stark	Dickinson Dike	1
Stark	Patterson Lake	3
Steele	North Golden Lake	3

COUNTY	LAKE	CLASSIFICATION
Steele	North Tobiason Lake	3
Steele	South Golden Lake	3
Stutsman	Arrowwood Lake	4
Stutsman	Bader Lake	3
Stutsman	Barnes Lake	3
Stutsman	Clark Lake	3
Stutsman	Crystal Springs	3
Stutsman	Hehn-Schaffer Lake	3
Stutsman	Jamestown Reservoir	3
Stutsman	Jim Lake	4
Stutsman	Spiritwood Lake	3
Stutsman	Pipestem Reservoir	3
Towner	Armourdale Dam	2
Towner	Bisbee Dam	2
Walsh	Bylin Dam	3
Walsh	Homme Dam	3
Walsh	Matejcek Dam	3
Ward	Hiddenwood Lake	3

COUNTY	LAKE	CLASSIFICATION
Ward	Makoti Lake	4
Ward	North-Carlson Lake	3
Ward	Rice Lake	3
Ward	Velva Sportsmans Pond	1
Wells	Harvey Dam	3
Wells	Lake Hiawatha (Sykeston Dam)	4
Williams	Blacktail Dam	3
Williams	Cottonwood Lake	3
Williams	East Spring Lake Pond	3
Williams	Epping-Springbrook Dam	3
Williams	Iverson Dam	2
Williams	Kettle Lake	2
Williams	Kota-Ray Dam	1
Williams	McCleod (Ray) Reservoir	3
Williams	McGregor Dam	1
Williams	Tioga Dam	3
Williams	Trenton Lake	2
Williams	West Spring Lake Pond	3

COUNTY	LAKE	CLASSIFICATION
	Lake Oahe	1
	Lake Sakakawea	1